ADDITIONAL SOILS ASSESSMENT WORKPLAN
HARRY'S AUTOMOTIVE SERVICE
1606 SOUTH ORANGE AVENUE
FRESNO, CALIFORNIA

Project No. 014-05051
May 31, 2005

Prepared for:
Mr. Harry Moomjian
Harry's Automotive Service
1273 East Tenaya Way
Fresno, California 93710
(559) 438-1916

Prepared by:
Krazan & Associates, Inc.
215 West Dakota Avenue
Clovis, California 93612
(559) 348-2200

TABLE OF CONTENTS
Project No. 014-05051

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

May 31, 2005 Project No. 014-05051

ADDITIONAL SOIL ASSESSMENT WORKPLAN
HARRY'S AUTOMOTIVE SERVICE
1606 SOUTH ORANGE AVENUE
FRESNO, CALIFORNIA

1.0 INTRODUCTION

This workplan was prepared for the environmental assessment of soil at 1606 South Orange Avenue in Fresno, California. Krazan & Associates, Inc. (Krazan) prepared this workplan at the request of the subject site owner, Mr. Harry Moomjian. Based on the findings of the July 18, 1989 removal of two 550-gallon underground storage tanks (USTs), soil underlying the USTs was impacted from the release of gasoline petroleum hydrocarbon constituents (PHCs). Krazan conducted a subsurface site assessment at the subject site in October 1990 under the auspices of the Fresno County Environmental Health System (FCEHS). The findings of the preliminary soil assessment were summarized in Krazan's November 8, 1990 report which indicated that further assessment appeared warranted. In a June 5, 1996 letter, the FCEHS requested that Mr. Moomjian perform a Risk Based Corrective Action for soil underlying the subject site. On April 1, 2005, Mr. Moomjian submitted an application for the State of California Underground Storage Tank Cleanup Fund (USTCF). A response from the USTCF is pending.

2.0 SITE LOCATION

The project site address is 1606 South Orange Avenue, Fresno, California (Figure 1). The Assessor's Parcel Number is 491-090-52. The project site is located in the northeast quarter of the southwest quarter of Section 11, Township 14 South, Range 20 East on the Fresno South 7.5 Minute quadrangle, Mount Diablo Baseline and Meridian. The subject site is currently occupied by an approximately 60-foot-by-70-foot shop building and an approximately 8-foot-by-12-foot metal shed. The ground surface is paved with portland cement concrete (PCC) west of the structure and in the vicinity of the metal shed. The UST excavations were located west of the structure and were backfilled but not repaved. Two fuel dispensers

were located within the eastern portion of the shop building. A site map including the approximate location of the former USTs is shown in Figure 2.

3.0 BACKGROUND

On July 18, 1989, two 550-gallon gasoline USTs were removed from the subject site by D & D Services of Clovis, California. The USTs were formerly located approximately 10 feet west of the on-site shop building. PHC odors and slight soil discoloration were noted during the excavations. A soil sample was collected during the removal operation from beneath each of the USTs by SSB Environmental Consultants (SSB) of Fresno, California. Chemical analysis of the soil sample collected beneath the northern UST (Tank No. 2) detected minor concentrations of total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Chemical analysis of the soil sample collected beneath the southern UST (Tank No. 1) detected elevated concentrations of TPH-G and BTEX. Results of the chemical analysis are provided in Table I.

Based on the results of the chemical analysis, the FCEHS issued a UST unauthorized release (leak)/contamination site report on August 11, 1989. In an August 15, 1989 letter, the FCEHS requested that a preliminary site characterization be conducted. The purpose of the preliminary site characterization was to assess the approximate vertical extent of PHCs in soil beneath each of the USTs and to examine the potential for an impact to groundwater. Krazan prepared a September 6, 1990 workplan, which was approved by the FCEHS on September 19, 1990.

Krazan conducted the preliminary site characterization field activities on October 11, 1990. Soil boring B1 was advanced through the center of the former northern UST to approximately 30 feet bgs. Soil samples were collected at 15, 25, and 30 feet bgs from soil boring B1. Soil boring B2 was advanced through the center of the former southern UST to approximately 55 feet bgs. Soil samples were collected at 15, 30, 45, 50, and 55 feet bgs.

Soil samples collected beneath the former northern UST at 15 and 25 feet bgs did not contain detectable PHC concentrations. The soil sample collected beneath the former northern UST at 30 feet bgs contained a trace concentration of xylenes. Soil samples collected beneath the southern UST at 15 and 30 feet bgs contained elevated concentrations of total volatile hydrocarbons (TVH) and BTEX. Soil samples collected beneath the southern UST at 45 and 50 feet bgs contained trace concentrations of TVH, toluene, and ethylbenzene. The soil sample collected beneath the southern UST at 55 feet bgs did not contain detectable PHC concentrations. Preliminary site characterization soil sample results are summarized in Table II.

Based on the analytical results of the soil samples collected on October 11, 1990, the FCEHS issued on January 5, 1996 letter requested that Mr. Moomjian perform a Risk Based Corrective Action by:

A. *Cleanup the site*
   or
B. *Gather and present information which demonstrates that the risk posed by the gasoline and diesel constituents present in the subsurface at the subject location is insignificant.*

4.0 SUBJECT SITE SOIL PROFILE

Sediments beneath the subject site consist of well-graded sands, silty sands, and sandy silts from 0 to 55 feet bgs, the maximum depth explored. Soil boring logs from the October 1990 drilling event are presented in Appendix A.

5.0 GEOLOGIC AND HYDROLOGIC SETTING

The topography of the site is relatively level. The site is located within the San Joaquin Valley, which is situated between the Sierra Nevada Mountains and Coast Range of California. The San Joaquin Valley comprises the southern portion of the Great Central Valley.

Unconsolidated materials found in the vicinity of the project site are generally composed of alluvial deposits of sands, silty sands, and silts with some minor clays and gravels. The source rock for this material is primarily the granitic and metamorphic rocks located in the Sierra Nevada. Sediments currently at or near the surface area believed to be of Quaternary (2 million years old or younger) alluvium derived from the nearby Sierra Nevada.

Groundwater beneath the project site exists in a single, unconfined aquifer. It is classified by U.S. Environmental Protection Agency as a sole source aquifer. As such, waters from this aquifer area highly regulated. The aquifer's level is variable and is influenced by the withdrawal of subsurface waters for domestic and agricultural uses. According to the State of California, Department of Water Resources, (DWR) San Joaquin District map titled *Lines of Equal Elevation of Water in Wells, Unconfined Aquifer, San Joaquin Valley, Spring 2004*, the elevation of the unconfined water table is approximately 200 feet above mean sea level. According to the United States Geologic Survey (USGS) 7.5 minute Fresno South, California topographic quadrangle map, the elevation of the project site may be interpolated to be approximately 293 feet above mean sea level. Calculation using these elevations yields a depth to groundwater of approximately 93 feet. According to the 2004 DWR Map and previous DWR maps, groundwater beneath the subject site generally flows in a southwest direction.

6.0 MUNICIPAL WATER WELLS

City of Fresno water well No. 1 is located approximately 1,200 feet north and up gradient of the subject site. City of Fresno water well No. 33 is located approximately 1,725 feet south and down gradient of the subject site. No other municipal water wells are located within one-half mile of the subject site. A drive-by survey to access potential water wells within 1,000 feet of the subject site will be conducted as part of the proposed site assessment.

7.0 PURPOSE OF THE PROPOSED ASSESSMENT

The purpose of the activity is to assess soil underlying the location of the former southern UST, so that one or more appropriate corrective actions may be identified and proposed, if corrective action is deemed warranted. It is possible that additional soil borings and sample analyses will be required to fully assess the extent of PHCs in the soil. The proposed assessment of the site will determine PHC concentrations in proximity to the 1990 soil boring B2 within the former southern UST excavation and to assess present concentrations of PHCs for comparison with the original 1990 PHC results. The results of this proposed assessment and recommended corrective action, if necessary, will be reported to the FCEHS for review and approval.

8.0 SCOPE OF THE PROPOSED ASSESSMENT

The scope of work would include preparing this workplan, drilling up to three exploratory soil borings to approximately 70 feet bgs on private property, collecting and analyzing soil samples, and preparing a report addressing a feasible risk based corrective action, if necessary. According to the City of Fresno Public Works Department, soil boring permits are only required if soil borings are to be drilled within public right-of-way or within 15-feet of the groundwater table. The methodology is summarized below.

The vertical and lateral delineation of the impacted soil will be conducted by drilling soil borings through the center of the former southern UST location, and up to 20 feet laterally from of the former southern UST location.

9.0 METHODOLOGY

The methods proposed to accomplish the purpose and scope of the proposed assessment are listed below.

1. Before the commencement of drilling activities, Underground Services Alert (USA) will be contacted to locate underground utilities in the public right-of-way. Before drilling, each boring location will also be carefully probed with a hand auger to a depth of approximately five feet bgs.

2. During the drilling of soil borings, the drill cuttings (soil) will be subjectively analyzed for odor and discoloration. Additionally, the soil may be field screened with a portable photoionization detector (PID). The PID readings would be recorded on field notes. The PID is a direct reading real-time analyzer that can detect most of the volatile hydrocarbon constituents present in the vapor phase of petroleum-affected soils.

3. Three soil borings will be advanced by hollow-stem auger to approximately 70 feet bgs in the vicinity of the southern UST. The approximate locations of the proposed soil borings are shown on Figure 2.

4. Soil samples will be collected to confirm and delineate the vertical extent of PHC contamination. These samples will be submitted for analysis of constituents noted below. At least one soil sample per 15 vertical feet and two soil samples representing the bottom 10 feet in each boring will be collected and submitted for analysis of PHCs. The maximum vertical extent of PHCs will be defined by two consecutive five-foot interval samples with no detectable PHC concentrations (analyzed by the California State Certified Hazardous Waste Laboratory).

5. Soils would be logged in accordance with the Unified Soil Classification System. Sampling will be conducted in accordance with Appendix B of the FCEHS May 1995 revision of the *Guidelines for Site Assessment/Corrective Actions, Workplan, and Reports* and the guidelines. Analytical results will be tabulated.

6. The soil borings will be backfilled with a sand-cement grout. The grout will be emplaced into the boreholes with a tremie pipe or equivalent means in one continuous operation, from the bottom of the borehole to the ground surface. The grout will be composed of a six-sack mixture containing approximately 188 pounds of sand and 6.5 gallons of clean water per 94-pound sack of Type 1 portland cement.

7. Drill cuttings (soil) and decontamination fluids referred to as investigation derived waste (IDW) will be temporarily contained in properly labeled DOT-approved steel 55-gallon drums. Mr. Moomjian will properly dispose of stockpiled soil within 90 days following material generation. Krazan is not the generator of the soil cuttings and is not responsible for their proper disposal. Detailed field records will be developed to document the source and volume of the drill cuttings. The PHC-impacted soil will be transported and disposed at a facility permitted by the State of California for recycling of PHCs.

8. Soil samples will be analyzed for the constituents of concern (COC) noted below. Analytical results will be tabulated and the summary report will contain laboratory reports and chain-of-custody.

Constituents of Concern	Analytical Method
BTEX	EPA Method 8021B
TPH-G	EPA Method 8015B
MTBE	EPA Method 8021B

Soil samples will be preserved and transported within cooler chests containing ice and maintained at a temperature of approximately 4 degrees Celsius. Laboratory quality assurance/quality control (QA/QC) will be performed commensurate with US EPA Level II QA/QC procedures.

9. Equipment used for the advancing of soil borings and the sampling of soils will be decontaminated (steam-cleaned, TSP, lab-grade detergents, etc.) before arriving on-site, between each boring and/or sampling, and before leaving the site each day, or as necessary to reduce the chances of cross-contamination. The decontamination fluids (rinsate) will be temporarily contained in DOT-approved steel 55-gallon sealable drums. The rinsate would be stored on-site pending analytical results and will be disposed by Mr. Moomjian within 90 days following material generation. Krazan is not the generator of the rinsate and is not responsible for its proper disposal.

10. Field work will be conducted by individuals meeting the Occupational Safety and Health Administration (OSHA) requirements for hazardous waste work including 40-hour health and safety training and medical monitoring. The work will be completed under standards set forth by the industry and deemed acceptable by various regulatory agencies. Hard hats, protective eye wear and clothing, steel-toe boots, and respiratory devices will be worn by field personnel when deemed appropriate by the field personnel present.

11. A site-specific health and safety plan will be prepared prior to implementing the field activities related to this workplan.

12. Upon completion of the field and laboratory investigation, a PAR report would be completed presenting the findings of the investigation.

10.0 PROJECT SCHEDULE

May 31, 2005	Submit this workplan to FCEHS.
July 1, 2005	Comment from FCEHS regarding this workplan.
July 11-22, 2005	Field activities, submit soil sample to the laboratory.
August 1, 2005	Receive laboratory analytical results.

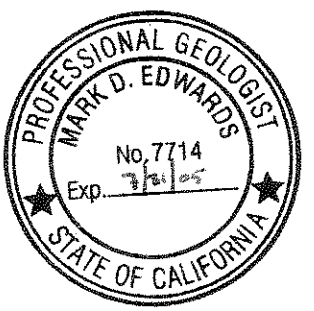
September 1, 2005	Submit findings/recommendations report to FCEHS.
October 1, 2005	Comment from FCEHS regarding the report.

11.0 LIMITATIONS

This workplan was prepared in accordance with generally accepted standards of environmental practice in Fresno County at this time. The sampling and testing will be conducted solely for the purpose of evaluating environmental conditions of the soil and groundwater with respect to the presence of petroleum constituents at the depth and locations sampled. No soil engineering or geotechnical implications are stated nor should they be implied. Evaluation of the conditions at the site for the purpose of sampling and testing will be made form a limited number of observation and sampling points. Subsurface conditions may vary beyond the data points available, and it is not possible to account for these variations, despite exhaustive additional testing.

12.0 CLOSING

If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.



Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Mark D. Edwards
Professional Geologist No. 7714

MDE/ awf

1c: Mr. Harry Moomjian
1c: Mr. Jim Armstrong, FCHES

TABLE I
Soil Sample Analytical Results
UST Removal Sampling
Harry's Automotive Service
1606 South Orange Avenue
Fresno, California
SSB Environmental Consultants
July 18, 1989 Sampling
(Concentrations in milligrams per kilogram (mg/kg))

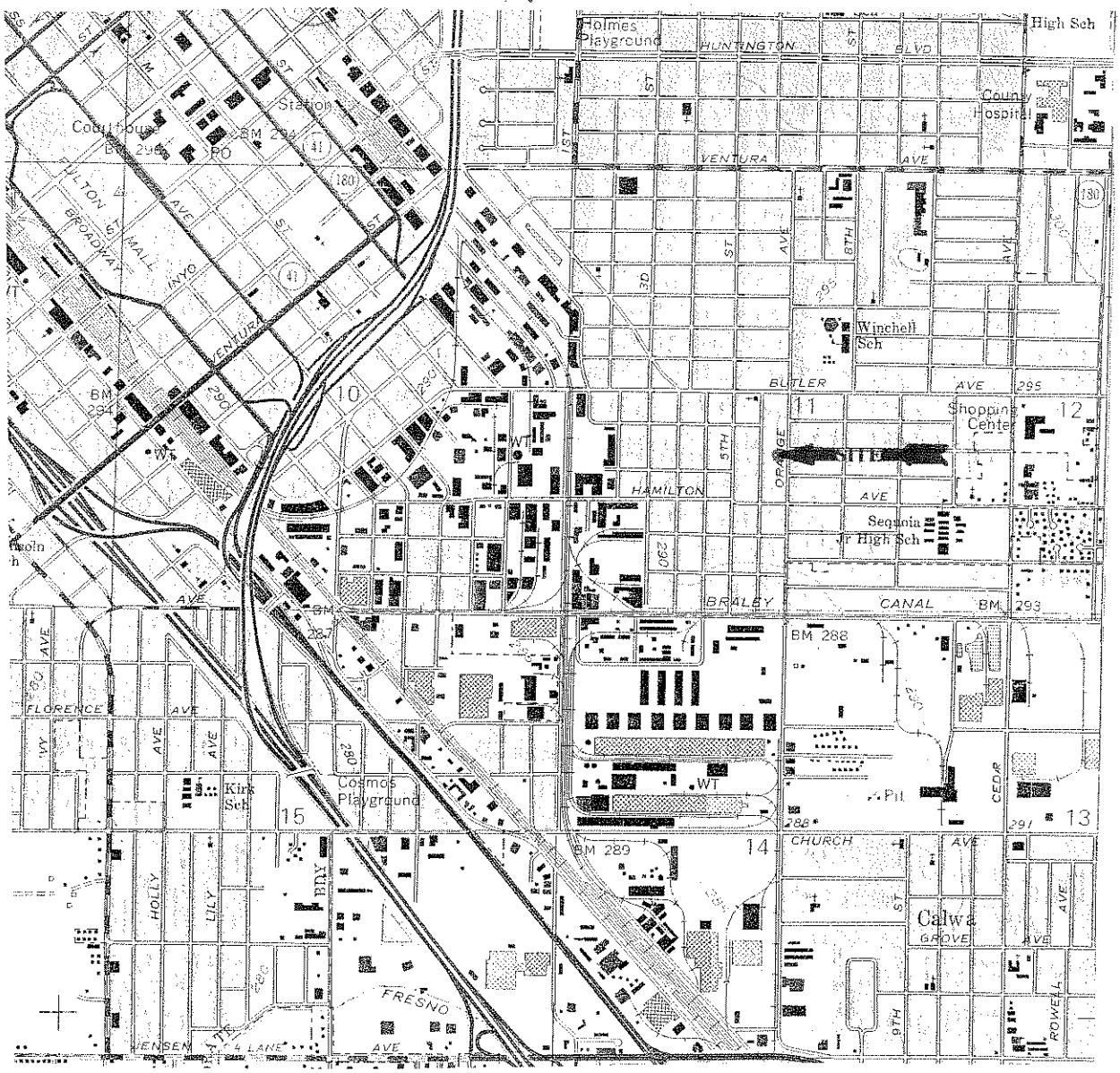
Sample Location	B	T	E	X	TPH-G
Tank 1*	130	340	490	3700	13,000
Tank 2*	0.27	1.2	1.6	11	430

UST = Underground storage tank.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
TPH-G = Total petroleum hydrocarbons as gasoline.
* = Sample collected at approximately three feet beneath the bottom of the UST.

TABLE II
Soil Sample Analytical Results
Preliminary Site Characterization
Harry's Automotive Service
1606 South Orange Avenue
Fresno, California
Krazan & Associates, Inc.
October 11, 1990 Sampling
(Concentrations in milligrams per kilogram (mg/kg))

Sample I.D.	B	T	E	X	TVH
Tank No. 2					
B1 @ 15 ft.	ND	ND	ND	ND	ND
B1 @ 25 ft.	ND	ND	ND	ND	ND
B1 @ 30 ft.	ND	ND	ND	0.11	ND
Tank No. 1					
B2 @ 15 ft.	0.30	32	29	210	1300
B2 @ 30 ft.	ND	15	16	110	890
B2 @ 45 ft.	ND	ND	ND	0.03	ND
B2 @ 50 ft.	ND	ND	0.02	0.39	10
B2 @ 55 ft.	ND	ND	ND	ND	ND

BTEX = Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020.
TVH = Total volatile hydrocarbons by EPA Method 8015M.
ND = Not detected at or above the laboratory reporting limit.



MAP SOURCE:
7.5 MINUTE SERIES
U.S.G.S. TOPOGRAPHIC MAP
FRESNO SOUTH, CA
DATED 1963
PHOTOREVISED 1981

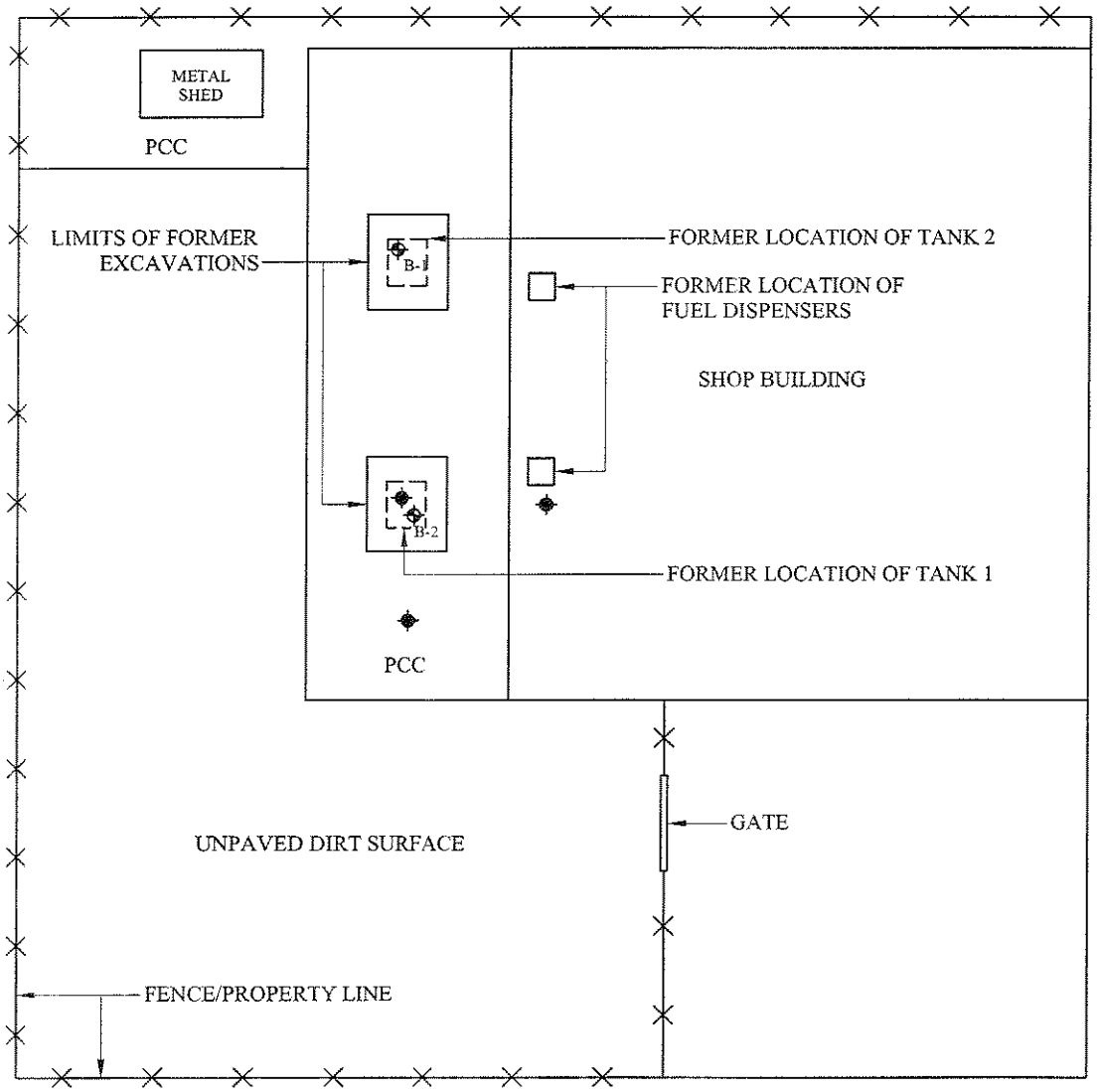
NORTH

0' 2000' 4000'

SCALE IN FEET (±)
*ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

VICINITY MAP	Scale: AS SHOWN	Date: 5/05
HARRY'S AUTOMOTIVE SERVICE 1606 SOUTH ORANGE AVENUE FRESNO, CALIFORNIA	Drawn by: A. L. F.	Approved by: M. D. E.
	Project No. 014-05051	Figure No. 1

Krazan
SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States



EXPLANATION

PCC PORTLAND CEMENT CONCRETE

APPROXIMATE LOCATION OF KRAZAN'S 1990 SOIL BORING

PROPOSED SOIL BORING

NORTH

0' 20' 40'

SCALE IN FEET (±)

*ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE

PROPOSED SOIL BORING LOCATION MAP

HARRY'S AUTOMOTIVE SERVICE
1606 SOUTH ORANGE AVENUE
FRESNO, CALIFORNIA

Scale:	Date:
AS SHOWN	5/05
Drawn by:	Approved by:
A. L. F.	M. D. E.
Project No.	Figure No.
014-05051	2

Krazan
SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States

Project: Harry's Automotive Service
1606 South Orange Avenue, Fresno, California

Boring No. 1
Project No. E90-166

DATE DRILLED: 10-11-90 TYPE OF BORING: 4 1/4" I.D. Hollow Stem Auger

HOLE ELEV: _____ GROUNDWATER LEVEL: _____ LOGGED BY: RH

Depth (Ft)	Odor	PID Reading	Undisturbed Sample	Graphic Log	Soil Classification	SOIL DESCRIPTION
5	NO	0	XX		(fill)	Fine gravel, fine to medium SAND (SW), medium brown, moist, drills easy.
					SW	Slight odor from cuttings at approximately 8 feet.
10	NO	0	XX		ML	Fine to medium SAND (ML), light brown, slightly moist, drill easy, partially cemented.
15	NO	0	XX		SW	Fine to medium SAND (SW), light brown, moist, drills easy, subangular to angular, predominatley quartz.
20	NO	0	XX			Fine to coarse SAND with fine gravel, partly cemented, below 18 feet.
25	NO	0	XX			Fine to medium SAND, no cementation below 24 feet.

*R = Refusal, greater than 100 blows/foot

KRAZAN & ASSOCIATES, INC.

Project: Harry's Automotive Service
1606 South Orange Avenue, Fresno, California

Boring No. 1
Project No. E90-166

DATE DRILLED: 10-11-90 TYPE OF BORING: 4 1/4" I.D. Hollow Stem Auger

HOLE ELEV: _____ GROUNDWATER LEVEL: _____ LOGGED BY: RH

Depth (Ft)	Odor	PID Reading	Undisturbed Sample	Graphic Log	Soil Classification	SOIL DESCRIPTION
30	NO	0	XX		SW	
						BOTTOM OF BORING
35						
40						
45						
50						

*R = Refusal, greater than 100 blows/foot

KRAZAN & ASSOCIATES, INC.

Project: Harry's Automotive Service
1606 South Orange Avenue, Fresno, California

Boring No. 2
Project No. E90-166

DATE DRILLED: 10-11-90 TYPE OF BORING: 4 1/4" I.D. Hollow Stem Auger

HOLE ELEV: _____ GROUNDWATER LEVEL: _____ LOGGED BY: RH

Depth (Ft)	Odor	PID Reading	Undisturbed Sample	Graphic Log	Soil Classification	SOIL DESCRIPTION
5	SLT	4	XX		(fill)	Fine gravel, fine to medium SAND (SW), medium brown, moist, drills easy.
					SW	Slight odor from cuttings at approximately 8 feet.
10	STR	300	XX		ML	Fine to medium SAND (ML), light brown, slightly moist, drill easy, partially cemented.
15	STR	300	XX		SW	Fine to medium SAND (SW), light brown, moist, drills easy, subangular to angular, predominatley quartz.
20	STR	300	XX			Fine to coarse SAND with fine gravel, partly cemented, below 18 feet.
25	STR	300	XX			Fine to medium SAND, no cementation below 24 feet.

*R = Refusal, greater than 100 blows/foot

KRAZAN & ASSOCIATES, INC.

Project: Harry's Automotive Service
1606 South Orange Avenue, Fresno, California

Boring No. 2
Project No. E90-166

DATE DRILLED: 10-11-90 TYPE OF BORING: 4 1/4" I.D. Hollow Stem Auger

HOLE ELEV: _____ GROUNDWATER LEVEL: _____ LOGGED BY: RH

Depth (Ft)	Odor	PID Reading	Undisturbed Sample	Graphic Log	Soil Classification	SOIL DESCRIPTION
					SW	
30	YES	120	XX		SM	Silty fine SAND (SM), medium grey, moist, drills firm, old petroleum odor.
35	MOD	75	XX			
40	NO	1	XX		ML	SILT (ML), dark brown, slightly moist, drills firm, very dense.
45	NO	2	XX			
50	NO	0	XX			

*R = Refusal, greater than 100 blows/foot

KRAZAN & ASSOCIATES, INC.

Project: Harry's Automotive Service
1606 South Orange Avenue, Fresno, California

Boring No. 2
Project No. E90-166

DATE DRILLED: 10-11-90 TYPE OF BORING: 4 1/4" I.D. Hollow Stem Auger

HOLE ELEV: _____ GROUNDWATER LEVEL: _____ LOGGED BY: RH

Depth (Ft)	Odor	PID Reading	Undisturbed Sample	Graphic Log	Soil Classification	SOIL DESCRIPTION
					ML	
30	NO	0	XX			BOTTOM OF BORING
35						
40						
45						
50						

*R = Refusal, greater than 100 blows/foot

KRAZAN & ASSOCIATES, INC.

Krazan & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

July 19, 2005 Project No. 014-05051

Mr. Jim Armstrong
Fresno County Environmental Health Services
1221 Fulton Mall, 3rd Floor
Fresno, California 93775

RE: Addendum to the May 31, 2005 Workplan
Harry's Automotive Service
1606 South Orange Avenue
Fresno, California

Dear Mr. Armstrong:

On behalf of Mr. Harry Moomjian, Krazan & Associates, Inc. (Krazan) prepared this work plan addendum letter in response to a verbal request from the Fresno County Environmental Health Services (FCEHS). The purpose of this letter is to provide additional detail of the proposed methodology associated with the additional soils assessment. In addition, a revised project schedule is included herein.

Risk-Based Corrective Action

Based on a June 5, 1996 letter issued by FCEHS, Krazan will follow option "B", gather and present information which demonstrates that the risk posed by the gasoline constituents present in the subsurface at the subject location is insignificant. Adequate information will be obtained so that acceptable determination of risk can be made by using the risk assessment methodology described in ASTM E1739-95. In addition, Krazan will calculate the approximate volume of impacted soil.

Drilling Methods

Krazan proposes advancing three soil borings using Geoprobe direct push technology. Target depths, based on the October 11, 1990 soil sample analytical results, will be 60 feet below ground surface (dgs). However, if the target depth of 60 feet bgs is not feasible using Geoprobe, Krazan will advance the soil borings using a hollow-stem auger drill rig. If hollow-stem auger drilling becomes the preferred method of soil boring advancement, the proposed soil boring within the onsite structure will be moved outside of the structure adjacent to its eastern wall.

Soil Sample Depths

Soil samples will be collected at depths of 15, 30, 45, 55, and 60 feet bgs. The 1990 soil sample results indicate that an impact by gasoline constituents extends to a depth of approximate 50 feet bgs. The 55

and 60 foot samples are intended to be the two five-foot interval consecutive samples with no detectable constituents present. However, if it is noted during the field activities that an impact extends below 50 feet bgs, Krazan will collect additional five foot samples up to 70 feet bgs, which is anticipated to be approximately 20 feet above the groundwater table.

Schedule

At this time, the field activities are tentatively scheduled for Monday July 25, 2005. Field work will require one day and soil sample analyses will be accomplished within 10 business days of the field work, the results of which will be discussed with the FCEHS. A final summary report will be submitted to the FCEHS within 10 days of receipt of the analytical results.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Mark D. Edwards
Professional Geologist No. 7714

MDE/amk

Attachment

1c: Harry Moomjian